IN THE SPECIFICATION:

Please amend paragraph number **[0001]** as follows:

[0001] This application is a continuation of application Serial No. 09/183,233, filed October 29, 1998, now U.S. Patent No. 6,336,974, issued January 8, 2002, which is a divisional patent application of Application Serial No. 09/020,197 filed February 6, 1998, now U.S. Patent 6,040,205, issued March 21, 2000, which is a continuation-in-part of Application Serial No. 08/906,578 filed on August 5, 1997, now U.S. Patent No. 6,336,973, issued January 8, 2002, hereby incorporated herein by reference, and also a continuation-in-part of Application Serial No. 08/906,673 filed on August 5, 1997, now U.S. Patent 6,013,535 hereby incorporated herein by reference.

Please amend paragraph number **[0006]** as follows:

[0006] Furthermore, and of even greater potential consequence than bond pad or street interference is the effect that the lateral flow or spread of adhesive material 310 has on the adhesive material upper surface 316. As shown in FIG. 47, the adhesive material upper surface 316 is the contact area for lead fingers 318 of a lead frame 320. The gravity-induced flow of the adhesive material 310 causes the once relatively well-defined edges 322 of the adhesive material to curve, resulting in a loss of surface area 324 (ideal shape shown in shadow) for the lead fingers 318 in which to attach. This loss of surface area 324 is particularly problematical for the adhesive material upper surface 316 at the longitudinal ends 326 thereof. At the adhesive material longitudinal ends 326, the adhesive material flows in three directions (to both sides as well as longitudinally), causing a severe curvature 328, as shown in FIGs. 48 and 49. The longitudinal ends of the adhesive print on patch flow in a 180° flow front, result in blurring of the print boundaries into a curved perimeter. This curvature 328 results in complete or near complete loss of effective surface area on the adhesive material upper surface 316 for adhering the outermost lead finger closest to the adhesive material end 326 (lead finger 330). This results in what is known as a "dangling~~lead".~~ lead." Since the lead finger 330 is not adequately attached to the adhesive material end 326, the lead finger 330 will move or bounce

when a wirebonding apparatus (not shown) attempts to attach a bond wire (not shown) between the lead finger 330 and its respective bond pad 304 (shown from the side in FIG. 48). This movement can cause inadequate bonding or non-bonding between the bond wire and the lead finger 330, resulting in the failure of the component due to a defective electrical connection.

Please amend paragraph number **[0007]** as follows:

[0007] LOC attachment can also be achieved by attaching adhesive tape, preferably insulative, to an active surface of a semiconductor die, then attaching lead fingers to the insulative tape. As shown in FIG. 50, two strips of adhesive tape 410 and 410′ are attached to an active surface 412 of a semiconductor die 404. The two adhesive tape strips 410, 410′ run parallel to and on opposing sides of a row of bond pads 406. Lead fingers 402, 402′ are then attached to the two adhesive tape strips 410, 410′, respectively. The lead fingers 402, 402′ are then electrically attached to the bond pads 406 with bond wires 408. Although this method is effective in attaching the lead fingers 402, 402′ to the semiconductor die 404, this method is less cost effective than using adhesive since the cost of adhesive tape is higher than the cost of adhesive material. The higher cost of the adhesive tape is a result of the manufacturing and placement steps which are required with adhesive tapes. The individual tape segments are generally cut from a larger tape sheet. This cutting requires precision punches with extremely sharp and accurate edges. These precision punches are expensive and ~~they~~ wear out over time. Furthermore, there is always waste between the segments which are punched out, resulting in high scrap cost. Moreover, once punch out is complete, the tape segments are placed on a carrier film for transport to the ~~die-attach~~ die-attach site. Thus, there are problems with placement, alignment, and attachment with film carriers, plus the cost of the film carrier itself. LOC attachment can further be achieved by placing adhesive material on the lead fingers of the lead frame rather than on the semiconductor substrate. As shown in FIG. 51, the adhesive material 502 may be spray applied on an attachment surface 504 of lead fingers 506. However, the viscous nature of the adhesive material 502 results in the adhesive material 502 flowing down the sides 508 of the lead finger 506 and collecting on the reverse, bond wire surface 510 of the lead finger 506, as shown in FIG. 52. The adhesive

material 502 which collects and cures on the bond wire surface 510 interferes with subsequent wirebonding, which, in turn, can result in a failure of the semiconductor component. The flow of adhesive material 502 from the attachment surface 504 to the bond wire surface 510 can be exacerbated if the lead fingers 506 are formed by a stamping process rather than by etching, the other widely employed alternative. The stamping process leaves a slight curvature 512 to edges 514 of at least one surface of the lead finger 506, as shown in FIG. 53. If an edge curvature 512 is proximate the lead finger attachment surface 504, the edge curvature 512 results in less resistance (i.e., less surface tension) to the flow of the adhesive material 502. This, of course, results in the potential for a greater amount of adhesive material 502 to flow to the bond wire surface 510.

Please amend paragraph number **[0013]** as follows:

[0013] The parent application hereto, U.S. Patent Application Serial No. 08/906,578 by Walter L. Moden, Syed S. Ahmad, Gregory M. Chapman, and Tongbi Jiang filed August 5, 1997, discloses a method of controlling the levelness of the exposed surface by attaching a coating stencil having small apertures, such ~~as~~ as a screen or a plate with slots, to the adhesive reservoir, wherein the only outlet for the adhesive material is through the apertures in the coating stencil. The adhesive material is thus forced through the coating stencil. The surface tension between walls of the small apertures and the adhesive material flattens out the exposed surface of the adhesive material. This allows a larger area to be printed with a more uniform thickness layer than if the coating stencil is not used. It is, of course, understood that the flatness or shape of the adhesive material can be controlled by the design of the apertures of the coating stencil. Thus, the invention of the parent application is an efficient way to use the surface tension of the adhesive material to control surface area and depth of the adhesive material available for application to lead fingers. However, the disclosure of the parent application does not explicitly disclose a method of controlling the depth of immersion of the lead fingers into the adhesive material.

Please amend paragraph number **[0017]** as follows:

[0017] It is also understood that the present invention can be used to apply viscous materials to any semiconductor element. For example, an adhesive material, conductive or ~~non-conductive,~~ non-conductive, can be applied to the surface of a carrier substrate, such as a printed circuit board, FR4, or the like, for attachment of a semiconductor chip to the carrier substrate, called "direct chip attach" or ~~"DCA",~~ "DCA," using the method of the present invention.

Please amend paragraph number **[0049]** as follows:

[0049] FIGs. 2 and 3 illustrate a schematic of one process of the present invention. Elements common to FIGs. 1, 2, and 3 retain the same numeric designations. The lead frame ribbon 100, such as illustrated in FIG. 1, is fed from a source 108, such as a spool, to an adhesive reservoir 110. As shown in FIG. 3, the lead fingers 104 (not shown) of the lead frame 102 (not shown) are aligned over the adhesive reservoir 110 and the lead frame ribbon 100 is biased downward in direction 112, such as by hydraulic, pneumatic, or ~~electrically powered~~ electrically powered biasing mechanisms 116, to contact an adhesive material 114. The adhesive material 114 may be any viscous adhesive material, including, but not limited to, thermoplastics, thermoset resins, flowable pastes, and B-stage adhesive materials. Preferred adhesive materials 114 include cyanate ester, bismaleimide, epoxy, and polyimide.

Please amend paragraph number **[0053]** as follows:

[0053] FIG. 11 is a side cross-sectional view of a lead finger 104 after adhesive material 114 application. FIG. 12 is a cross-sectional view of the lead finger 104 of FIG. 11 along line ~~12-12.~~ 12–12. As shown in FIGs. 11 and 12, by only extending the lead fingers 104 a predetermined distance into the adhesive material 114 without breaking the surface tension of the adhesive material 114, the adhesive material 114 will not wet sides 128 of the lead finger 104 and, of course, will not collect on a bond wire surface 130 of the lead finger 104 (the bond wire surface 130 is the lead finger surface where a bond wire is subsequently attached during further processing). Since the adhesive material 114 does not collect on the bond wire surface 130, there will be no adhesive

material 114 to interfere with a wirebonding step subsequent to LOC attachment of the lead fingers 104 to an active surface of a semiconductor die.

Please amend paragraph number **[0067]** as follows:

[0067] FIGs. 25 and 26 illustrate coating stencils 188 and 190, respectively, which each have a lead finger stop 192 about a periphery of each coating stencil. FIG. 27 illustrates a ~~cross-sectional~~ <u>cross-sectional</u> view of the coating stencil 188 along lines 27-27 of FIG. 25. FIGs. 28-30 illustrate cross-sectional views of the lead fingers 104 being brought into contact with the adhesive material 114 on a coating stencil 194, such as illustrated in FIGs. 25 and 26, and being retracted therefrom. Elements common to FIGs. 5-10 and 25-27, and FIGs. 28-30 retain the same numeric designations. As shown in FIG. 28, the lead fingers 104 are positioned over the adhesive reservoir 110. The adhesive reservoir 110 has the adhesive material 114 extending through apertures (not shown) in a coating stencil 194, such as the coating stencil 188 illustrated in FIG. 25 and the coating stencil 190 illustrated in FIG. 26.